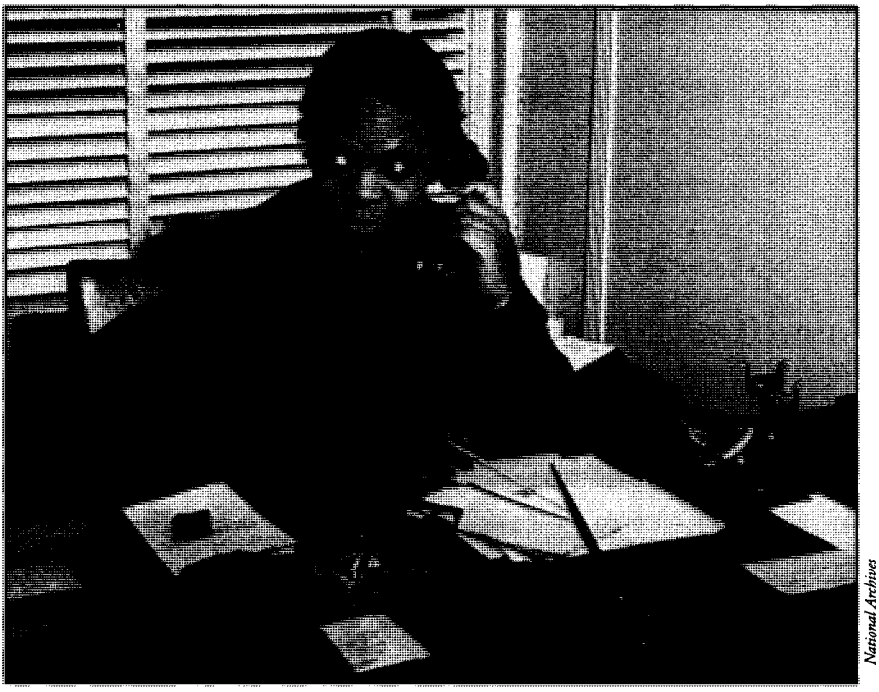
CHAPTER 4

Work and Learning in the 21st Century



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Eunice Hunton Carter, born in 1899, was a trailblazer for expanded labor market opportunities for women and minorities. She received bachelor's and master's degrees from Smith College, went on to Fordham Law School, and ultimately became the first African American woman district attorney in New York. Special prosecutor Thomas E. Dewey made her one of his "twenty against the underworld" who investigated organized crime in the late 1930s.

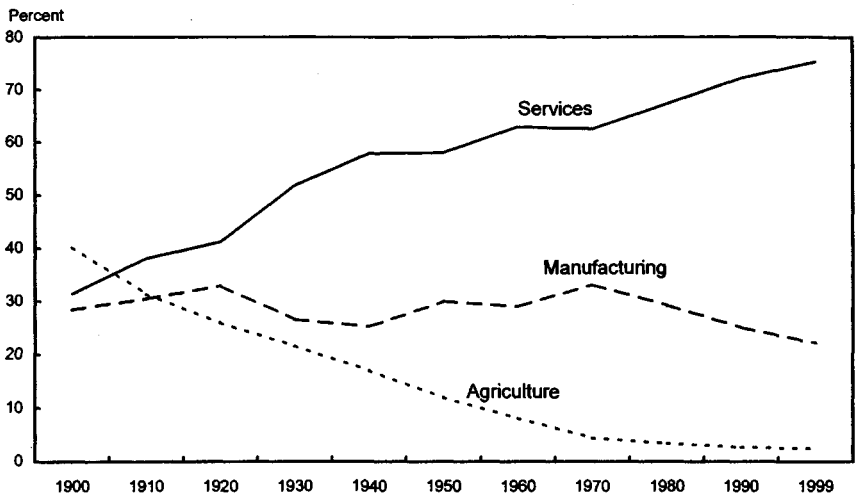
The nature of work has changed dramatically over the past 100 years. Today, vastly fewer people work on farms, and women are much more likely to be working for pay. Discrimination, which long limited the participation of minorities and women in the labor market, is now illegal and has been greatly reduced. In addition, the educational attainment of our labor force has risen sharply. These changes have combined to produce the most diverse and highly educated work force in our country's history. The tools and techniques of work also changed dramatically over the 20th century. At the beginning of the 21st century this has meant a technological revolution, which has affected the majority of jobs and put a premium on a new set of skills. This chapter examines the new labor market and the role government will play in preparing workers for the next century.

Formal education was a far less important job qualification for most workers at the turn of the last century than it is now. Over 40 percent of the work force was in agriculture, and another 28 percent was in manufacturing. Services, broadly defined, accounted for the remaining 31 percent (Chart 4-1). In keeping with this industry mix, a large proportion (38 percent) of workers were occupied in farming, forestry, or fishing. Another 25 percent were operators or laborers. Managers and professionals represented just 10 percent of the work force, and sales and administrative support occupations just 8 percent.

Over the course of the 20th century, the share of total employment in agriculture declined steadily. Until the early 1970s, manufacturing employment grew roughly in line with growth in the labor force, and manufacturing's share of total employment remained roughly constant. Since then, however, employment in services has accelerated, and the share of employment in manufacturing has declined. The occupational mix has changed accordingly. By 1999, 30 percent of workers were employed as managers and professionals, and 26 percent worked in technical, sales, and administrative support occupations. Operators, fabricators, and laborers made up just 14 percent of the work force, and farming, forestry, and fishing occupations represented a scant 3 percent.

Most recently, the change in the industrial and occupational mix of the economy has been associated with a technological revolution. That revolution has been a rich source of new jobs, but many of those jobs require familiarity with the latest technological advances. In 1996, for example, the share

Chart 4-1 Composition of Employment by Major Sector Since 1900
Over the 20th century, the U.S. work force shifted massively out of agricultural jobs and into service occupations.



Note: The manufacturing sector includes manufacturing, mining, and construction. The services sector comprises public administration; transportation, communication, and public utilities; wholesale and retail trade; and finance, insurance, and real estate.
Sources: Department of Commerce (Bureau of the Census) and Department of Labor (Bureau of Labor Statistics).

of total employment in industries that are intensive users of information technology was 41 percent. Projections by the Bureau of Labor Statistics suggest that this figure will rise to 44 percent by 2006. Other projections indicate that the five fastest growing occupations between now and 2008 will be related to computers.

This evolution of the labor market from one based on a strong back to one based on a strong mind has both caused and been driven by substantial improvements in educational attainment. The change in the education of the work force and the increasing value of education represent an important transformation of the labor market over the course of the century. A second important transformation has been an opening up of opportunities to women, minorities, and persons with disabilities. The typical adult female in 1900 was working at home or on the farm, and those women who worked for wages were likely to be unmarried and in low-paying occupations. African Americans and other minorities were also generally limited in their occupational choices. Over the course of the century, however, women and minorities entered the labor force in increasing numbers and enjoyed expanded occupational choice, and their earnings have risen. All groups have made substantial improvements in educational attainment and have shared in the greater wealth generated from the accumulation of skills and higher productivity.

This chapter analyzes these two key transformations of the labor market—the increasing value of education and the increasing opportunities for women, minorities, and persons with disabilities—and assesses the challenges they pose for current policy. Although education has proved to be an avenue toward higher earnings for all, a large gap has emerged between the wages of those with education beyond high school and the wages of those with less education. The economy has changed in a way that places a high premium on certain skills, some of them unknown only a few years ago, and workers without those skills are increasingly likely to be left behind. This wage premium provides a strong market signal about the value of education, but evidence suggests that many workers lack the skills needed for today's jobs. Therefore government policies have a role to play. Governments at all levels have traditionally been involved in providing education, in part because of the social as well as economic benefits associated with it. The last part of this chapter examines the role of government and, more specifically, the initiatives put forth by this Administration to improve the quantity and quality of education and training of the American work force and provide new opportunities for American workers. The challenge for public policy in the 21st century will be to develop an appropriate set of education and training policies, one that creates a framework of lifetime learning within which workers can acquire and maintain both the basic skills and the more technical skills they need in the new labor market.

The Transformation of the Labor Market

A hallmark of our increasingly technology-driven and knowledge-intensive labor market is the importance of education for success. The gains in educational attainment that the U.S. labor force achieved over the course of the 20th century were impressive and have led to great improvements for many groups. Yet the number of educated workers, although growing, has been falling short of demand: employers eager to hire qualified workers have driven up the relative wages of those who have the desired skills. In the 1980s and early 1990s, those who acquired the education and training that employers sought were rewarded in the labor market, while those who lacked that preparation saw their earnings lag behind.

The Rising Importance of Skills and Education

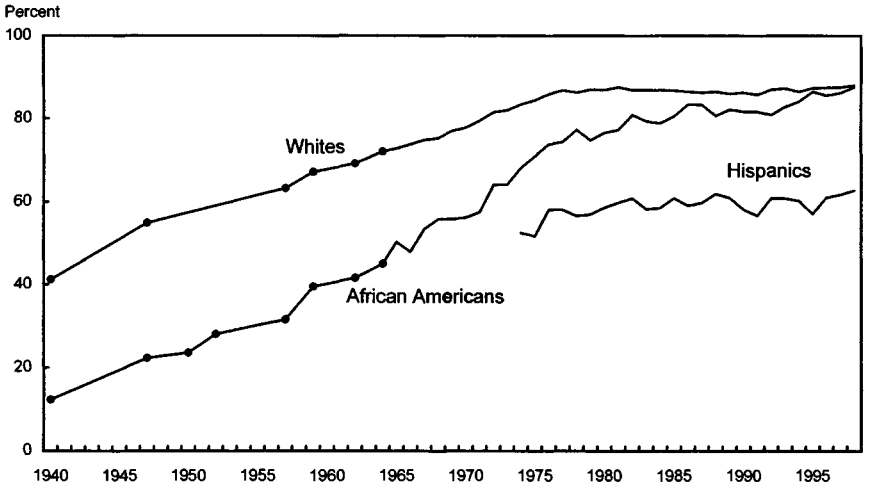
Growth in Educational Attainment

The average level of education of the U.S. working-age population increased dramatically in the 20th century. Many more Americans than ever before are graduating from high school and college, and overall educational attainment has increased. The median number of years that an adult American has spent in school rose from 8.6 in 1940 to nearly 13 in the 1990s. In addition, the disparity between men and women in high school and college completion rates has disappeared. In fact, in the decade just past, women completed both high school and college at slightly higher rates than men.

The gap in years of schooling between whites and other groups also narrowed substantially over the century. The gap between African Americans and whites in high school graduation rates fell markedly from the 1940s to the present (Chart 4-2). Whereas in 1940 the proportion of whites who had completed high school was more than triple that of African Americans (41.2 percent versus 12.3 percent), by 1998 this gap had virtually disappeared, with 88 percent of both groups having completed high school. Hispanics have not made the same gains, however, and the proportion of this population that had completed high school (which includes those Hispanics who immigrated as adults) was only 62.8 percent in 1998. Raising the high school completion rates of Hispanics has been an important goal of this Administration, and to achieve it, the President has pushed for the first-ever Hispanic Education Action Plan. The Federal budget for fiscal 2001 includes $823 million in increased funding for a number of education programs that help to improve the educational outcomes of Hispanics and other students with limited English proficiency.

College completion rates increased over the second half of the century (Chart 4-3). In contrast to high school completion rates, however, the racial

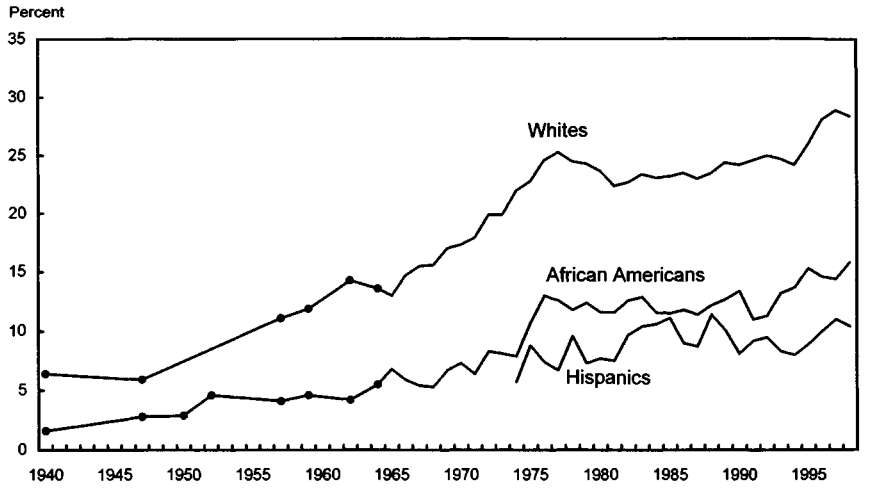
Chart 4-2 **High School Graduation Rates of 25- to 29-Year-Olds by Race and Ethnicity**
High school graduation rates have vastly improved since 1940. Rates for whites and African Americans have converged, but Hispanics lag behind.



Note: Annual data by race are available only since 1964; dots indicate previous years with available data. Before 1992, high school graduates are defined as having completed 4 years of high school. Since 1992, high school graduates are those who have received a high school diploma.
Source: Department of Commerce (Bureau of the Census).

and ethnic gap in college graduation rates remains large. In 1940, 6.4 percent of whites aged 25-29 had completed college; by 1998, 28.4 percent had. African American and Hispanic graduation rates have improved over the same period, but they still lag far behind that of whites. Although the rate for African

Chart 4-3 **College Completion Rates of 25- to 29-Year-Olds by Race and Ethnicity**
Many more Americans finish college today than in 1940, but completion rates for African Americans and Hispanics remain well below that for whites.



Note: Annual data by race are available only since 1964; dots indicate previous years with available data. Before 1992, college graduates are defined as having completed 4 years or more of college. Since 1992, college graduates are those who have received a college degree.
Source: Department of Commerce (Bureau of the Census).

Americans has risen almost 10-fold since 1940, only 15.8 percent of African Americans and only 10.4 percent of Hispanics aged 25-29 held bachelor's degrees in 1998. A number of Administration policies seek to improve access to postsecondary education and are discussed later in this chapter.

Changes in the Demand for Skills

These statistics show clearly that the American labor force is becoming more educated over time, but are these increases in educational attainment keeping up with the demands of an increasingly technology-driven labor market? And in that market, what happens to those who do not keep up? The rise in importance of basic computer skills illustrates the concern. Computer use on the job has increased tremendously since the introduction of the personal computer in the late 1970s. Already by 1984 about a quarter of all workers were using a computer at work, and by 1997 that proportion had risen to virtually half. What this trend implies is that the pool of potential jobs is shrinking for those who lack basic computer skills.

But it is not just computer skills that are in demand in today's labor market. Survey evidence from the 1992-94 period indicates that most jobs available to workers without a college degree require not only specific experience but the ability to perform basic tasks involving reading, writing, or arithmetic and the interpersonal skills to serve customers effectively. Focusing specifically on jobs available to those without a college degree, this survey found that over half of such jobs required workers, on a daily basis, to deal with customers (70.0 percent), read or write paragraphs (61.1 percent), do arithmetic (64.7 percent), or use computers (50.7 percent). Only 8 percent of the jobs available to non-college graduates required none of these skills.

Does this imply that the skill demands of employers have been increasing over time? Direct research evidence on this question is limited, but it suggests that indeed they have. The same survey asked employers directly whether overall skill use on jobs they had recently filled had risen in the past 5 to 10 years. The results indicate substantial increases in each of the skill categories (23 to 25 percent) over this relatively short period. The data also show that the changes in labor outcomes (wages and employment) for certain groups that took place over this time have occurred in a manner consistent with firms demanding greater levels of skill.

A mismatch does seem to be emerging between the skills that workers possess and the skills that employers demand. For example, a 1996 survey of medium-size and large businesses by the American Management Association found that 19 percent of applicants for vacant jobs lacked the necessary math and reading skills, but by 1998 this proportion had increased to almost 36 percent. Another recent study, this one of manufacturers, found that demand for nontraditional skills, such as computer skills, interpersonal and teamwork

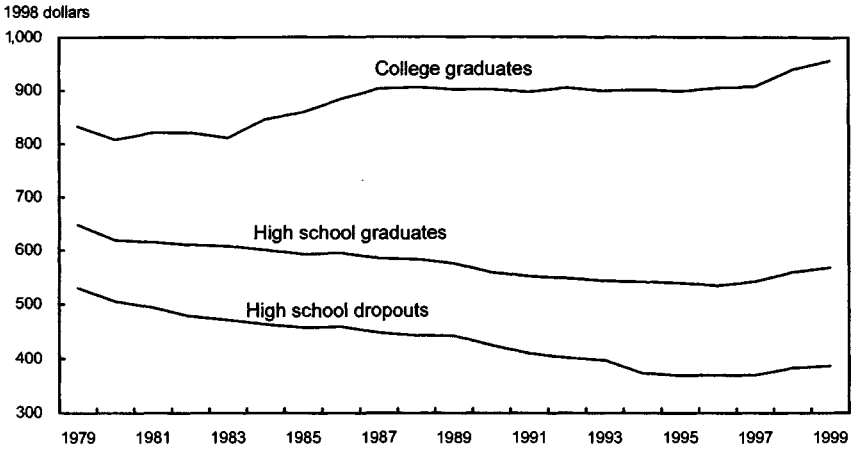
skills, and problem-solving skills, has been rising rapidly, especially among high adopters of new technology. Computer skill requirements were more frequently cited than other requirements as having increased from 1993 to 1996. However, employers cited more difficulty in finding applicants with good problem-solving skills than in finding qualified computer-skilled applicants. Although these results in part reflect the strong labor market of this period, they also indicate a rising absolute demand for skills.

Changes in the Education Premium

A sharp increase in the wages of college graduates relative to those without a college degree provides indirect but striking evidence of rising demand for workers with higher level skills. Between 1979 and 1999 the median real weekly wages of comparable male college graduates aged 25 and over who worked full-time rose by almost 15 percent, from $833 to $957 (Chart 4-4). Despite a 6 percent increase since 1996, the earnings of full-time working males with only a high school diploma fell by 12 percent over the same period. In 1999 the real weekly wages of male high school graduates were $568, down from $648 in 1979. Similarly, the real weekly wages of those with less than a high school diploma declined by 27 percent between 1979 and 1999, from $530 a week to $387, although their real wages in 1999 were 5 percent higher than in 1995.

In 1979 the median weekly earnings of male college graduates were 29 percent higher than those of similar men who possessed only a high school

Chart 4-4 Median Weekly Earnings of Male Workers by Educational Attainment
Real earnings of non-college graduates remain lower today than in 1979, but wages for college graduates and non-college graduates have risen in recent years.

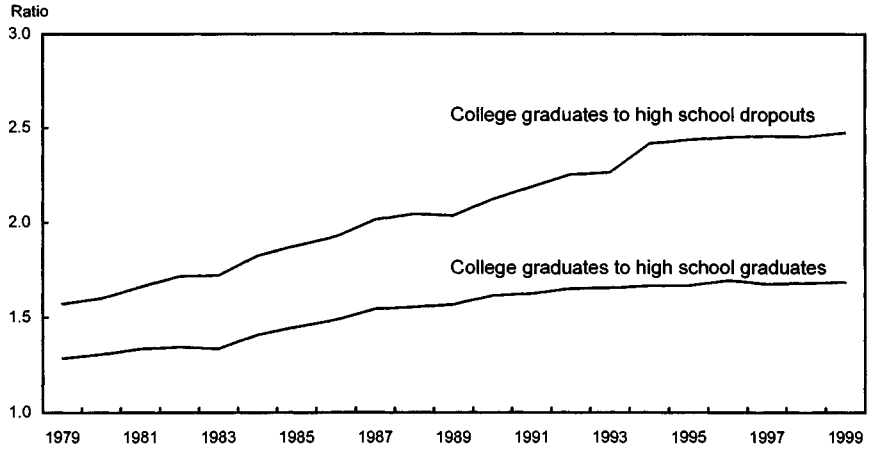


Note: Earnings are in 1998 CPI-U-RS adjusted dollars. Data are for men aged 25 and over working full-time. Before 1992, high school dropouts are defined as having completed less than 4 years of high school, high school graduates as having completed 4 years of high school but no college, and college graduates as having completed 4 years or more of college. Since 1992, data on educational attainment are based on the highest diploma or degree received, rather than the number of years of school completed.
Source: Department of Labor (Bureau of Labor Statistics).

diploma (Chart 4-5). That same year the median earnings of male college graduates were 57 percent higher than those of high school dropouts. Other evidence suggests that these ratios had been roughly constant or even declining slightly in the decade prior to 1979. By 1999 college graduates were earning 68 percent more per week (again measured at the median) than high school graduates, and 147 percent more than those who had not completed high school. Since the mid-1990s the returns to lower levels of education have increased at about the same rate as returns to college education, implying that the gap is little changed. Overall, this evidence suggests that there has been rapid growth in the demand for skills over the past two decades, because the premium associated with a college education has gone up even as the supply of college graduates has increased.

Providing further support for the rising importance of skills is evidence that, even within education groups, the rates of return to cognitive skills (reading and math skills, for example) may have increased in recent decades. Research has used longitudinal surveys to examine what impact a person's level of basic math and reading skills, as measured by scores on cognitive tests administered in high school, have on that person's wages after graduation. Results from a sample of high school graduates who did not go on to college indicate not only that a greater mastery of basic skills translates into higher wages, but also that this relationship has grown stronger over recent years. The implication is that basic skills are more important in the labor market than in the past. The same data also allow us to address the question of whether the educational wage premium

Chart 4-5 **Ratios of Median Weekly Earnings of Male College Graduates to Earnings of High School Graduates and Dropouts**
The gap in earnings between college graduates and those with less education widened during the 1980s and early 1990s, but it now seems to have stopped growing.



Note: Data are for men aged 25 and over working full time. Before 1992, high school dropouts are defined as having completed less than 4 years of high school, high school graduates as having completed 4 years of high school but no college, and college graduates as having completed 4 years or more of college. Since 1992, data on educational attainment are based on highest diploma or degree received, rather than the number of years of school completed.
Source: Department of Labor (Bureau of Labor Statistics).

already demonstrated is due to differences in skills between those who choose to go on to college and those who do not. When high school and college graduates are compared, the results suggest that, controlling for scores on math tests, between 1978 and 1986 there would have been no growth in the college wage premium for women, and only one-third as much for men. This again demonstrates the growing importance of skills for labor market outcomes.

In addition to finding a widening gap between the wages earned by different education groups and between people with different levels of cognitive skills, researchers have found evidence that skills associated with new technologies are becoming more important in the labor market. One such piece of evidence is the gap in wages between workers in information technology industries and those in other industries. According to the U.S. Department of Commerce, in 1997 workers in information technology-producing industries earned on average almost 78 percent more than did workers in all industries combined. And this figure was up sharply from 56 percent in 1989.

To the extent that higher education indicates a higher level of skill, one common explanation for the premium associated with education is referred to as "skill-biased technological change"—technological change that has caused demand for high-skilled workers to increase more rapidly than that for low-skilled workers. What might account for this effect? One explanation may be that when new technologies are introduced, workers already well endowed with certain skills are better able to use them. Technological change may also create scope for organizational changes in the workplace, such as more decentralized decisionmaking, which would further stimulate demand for workers with higher education. Adding to this, demand for less skilled workers has decreased in relative terms as some low-skilled jobs have been replaced by more automated production processes. But there are other possible explanations for the increase in the college wage premium. One is decreased demand for low-skilled workers as international trade has allowed imports to substitute for the goods these workers used to produce. As discussed in Chapter 1, however, recent evidence casts some doubt on these hypotheses: rapid technological growth and increased trade in the 1990s did not lead to increased inequality but, in fact, coincided with the end of a 20-year trend toward greater inequality. Other possible contributors to the higher college wage premium include the decline in the real minimum wage over the 1980s and the loss of collective bargaining power with the decline in unionization rates over the same period.

Growth in Opportunities

The 20th century witnessed changes in job opportunities for all workers. Changes were already under way at the start of the century, when the women's suffrage movement was active, and change continued with the civil rights movement of the 1960s. Government has played a critical role in

ensuring equal opportunity for all workers through the passage of the 19th Amendment, and later through such legislation as the 1964 Civil Rights Act, the 1967 Age Discrimination in Employment Act, the 1990 Americans with Disabilities Act, and, most recently, the 1999 Work Incentives Improvement Act. This last piece of legislation eliminated institutional barriers that had limited the employment opportunities of persons with disabilities. Thanks to these and other initiatives, jobs that were once closed to women, minorities, the disabled, and the aged are now open to all, regardless of their work-irrelevant characteristics. Rising demand for labor in general may have contributed to growth in opportunities for groups that have traditionally lacked access, but it should not be forgotten that these and other acts of government helped open the door.

The Economic Progress of Women

The progress made by women in the paid labor market has been one of the most important economic changes of the 20th century. In the early 1900s, men and women, if they were in the labor market, typically worked in different jobs. Whereas some 79 percent of men worked in manufacturing or agricultural jobs, the comparable figure for women was only about 47 percent. A plurality (28.7 percent) of women in the labor force were employed as private household workers, but fewer than 1 percent of men held such jobs. The differences for African American women are even more striking. It is estimated that among African American women who were in the labor market in 1890, over 90 percent worked as servants or agricultural workers.

Disparities remain even today, but today's occupational categories are much more likely to contain substantial numbers of both men and women. Table 4-1 examines the participation of female workers in a range of detailed occupational groups and how it has changed over recent years. Many occupations experienced sizable increases in the percentage of women employed, beyond the overall rise in female labor force participation. For instance, the share of engineers who are female rose from 1.2 percent to 10.6 percent between 1950 and 1999, and the share of lawyers who are female increased eightfold, from 3.5 percent to 28.8 percent.

The opening of opportunities in the labor market for these groups has gone hand in hand with improvements in labor market outcomes. An extensive social science literature documents these gains and attempts to identify their sources. One way of assessing progress is to consider the earnings of one group relative to another: Chart 4-6 shows the ratio of female to male median annual wage and salary income for all workers from 1967 to 1998 and the comparable ratio for annual earnings of full-time, full-year workers from 1960 to 1998. In 1967 the median woman worker earned about 40 cents for every dollar that a man earned. Among full-time, full-year workers, the ratio

TABLE 4-1.—*Share of Women Employed in Selected Occupations in 1950 and 1999*

[Percent]

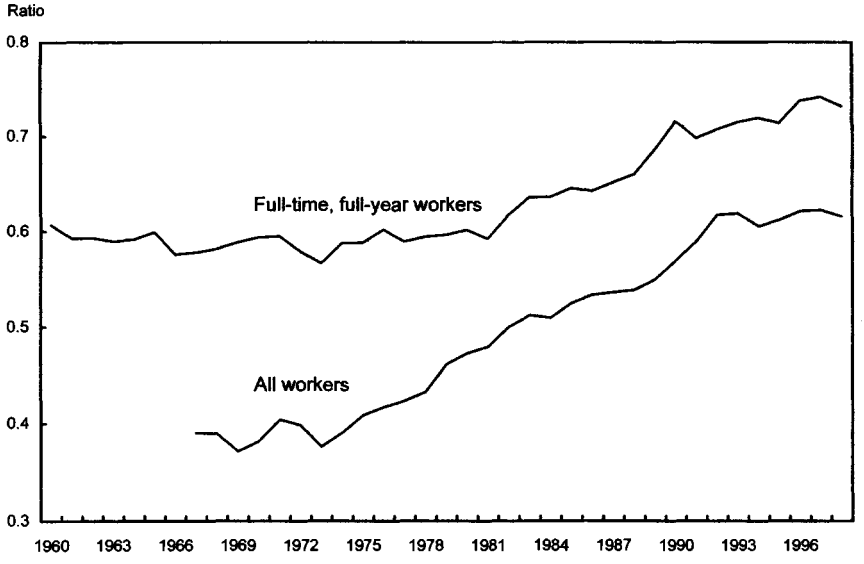
Occupation	1950	1999
Architects	4.0	15.7
Biological and life scientists	29.2	43.8
Chemists, except biochemists	10.0	27.4
Clergy	4.1	14.2
Dentists	2.7	16.5
Dietitians	94.3	84.0
Economists	18.4	51.2
Editors and reporters	37.6	49.8
Engineers	1.2	10.6
Lawyers	3.5	28.8
Librarians	88.6	83.7
Pharmacists	8.3	49.0
Physicians	6.1	24.5
Psychologists	43.8	64.9
Public relations specialists	10.5	61.0
Registered nurses	97.6	92.9
Social workers	69.2	71.4
Teachers		
Elementary school	90.9	83.8
Secondary school	56.7	57.5

Sources: Department of Commerce (Bureau of the Census) and Department of Labor (Bureau of Labor Statistics).

in that year was about 60 cents on the dollar, approximately the same as during most of the 1960s and 1970s. Since then, however, the gap between men and women has narrowed. In 1998 the ratio of median earnings of women to

Chart 4-6 **Ratios of Median Annual Earnings of Female Workers to Earnings of Males**

Ratios of female to male earnings have increased since the mid-1970s.



Note: Data are for wage and salary workers aged 14 and over through 1979 and aged 15 and over thereafter.
Source: Department of Commerce (Bureau of the Census).

those of men (again looking at full-time, full-year workers only) was 73 cents on the dollar.

An important research and policy question is how much of this gap is due to labor market discrimination. Because it is difficult to measure discrimination directly, researchers have explored this issue by first controlling for other factors that might legitimately explain the gap. For instance, an additional year of schooling is estimated to increase a worker's wages, on average, by 5 to 15 percent, and an additional 25 years of work experience increases wages by an estimated 80 percent. These findings have led some to attribute much of the male-female wage gap to differences between the sexes in education and labor market experience. A recent study using longitudinal data from the late 1980s found that about one-third of the pay gap was explained by differences in the skills and experience that women bring to the labor market. This study also found that about 28 percent of the gap was due to differences in the industries and occupations in which men and women worked and in their union status. Accounting for these differences raises the ratio of female to male median wages for the late 1980s from about 72 percent to about 88 percent, leaving around 12 percent unexplained.

Even as several beneficial trends have tended to boost women's wages relative to men's and helped narrow the male-female wage gap, two major trends have worked simultaneously to widen it. The first is increases in the pay premium associated with higher skill (as measured by educational attainment and labor market experience), and the second is increased differences in pay across industries and occupations. Despite the gains just documented, these trends have served to widen the wage gap because female workers still have less labor market experience, on average, than male workers, and because women tend to work in occupations with slower wage growth than those of men. Rising wage inequality across occupations, together with increasing economic returns to skills, slowed women's progress during the 1980s.

Although recent trends suggest that progress is being made, no one should doubt that barriers remain. Studies that have tried to measure discrimination by directly looking at pay differences between men and women in very similar jobs, or by comparing pay with specific measures of productivity, have found evidence of discrimination. There is also evidence that discrimination remains a problem at the highest levels of management. For example, in 1999 only four of the chief executive officers of Fortune 500 companies were women. A recent study notes that of the five highest paid executives at each of 4,200 companies, only 2.5 percent were women, and they earned about 45 percent less than their male counterparts. Although differences in managerial experience and company size can explain a large part of this wage gap, the "glass ceiling" may still be stopping the advancement of women within management hierarchies. To make further progress in this area, the President's 2001 budget proposal includes

$27 million for an Equal Pay Initiative that will, among other things, strengthen the ability of the Equal Employment Opportunity Commission to identify and respond to wage discrimination.

The Economic Progress of African Americans

Over the long term, the convergence of earnings between African Americans and whites is perhaps even more impressive than that between men and women. The gap in earnings between African American and white males declined between World War II and the late 1970s. One study showed that whereas in 1939 African American male wages averaged 43 percent of white male wages, by 1979 this percentage had risen to 73 percent. The study noted that convergence in education has been central to these improvements. Chart 4-7 presents recent evidence showing that the relative earnings of African American men have been increasing only gradually since the 1970s. This trend is broadly consistent with the education data presented above. Other research has shown that government policy appears to have played a role in improving at least the employment rates of African American men (Box 4-1), an area of considerable importance given the differences in unemployment rates between the two groups.

Research has also shown a near convergence in the earnings of African American and white females, although this trend has somewhat reversed in recent years. One study found that African American women in 1939 earned 40 percent of what white women earned; by 1979 that ratio had risen to 90 percent. Chart 4-7 shows that African American women's earnings have slipped relative to those of white women since the early 1980s. (However, the gap in earnings between white women and African American women remains smaller than the corresponding gap for men.) Despite these changes, other indicators of progress have been encouraging. For example, the unemployment rate for African Americans in 1999 was the lowest on record.

The Economic Progress of Persons with Disabilities

It has been estimated that one in five Americans of working age has a disability. A person is typically considered disabled if he or she has difficulty performing certain functions such as seeing, hearing, or walking; has difficulty performing activities of daily living; or has difficulty with certain social roles such as attending school or working. It is also estimated that 1 in 10 Americans is severely disabled, in need of assistance from specialized devices or other persons to perform basic activities. For working-age persons with disabilities, reducing discrimination, easing the transition into work, and improving labor market outcomes have been important goals of this Administration.

The labor market behavior of persons with disabilities often tracks the behavior of the broader groups to which they belong. For example, the

Box 4-1. The Role of Government Policy in Improving the Economic Status of African Americans

The Federal Government has led the way in extending opportunities to all Americans. Title VII of the 1964 Civil Rights Act outlawed employment discrimination on the basis of race, color, religion, sex, or national origin and established the Equal Employment Opportunity Commission (EEOC) to monitor compliance with the law and enforce its statutes. These statutes covered employers with at least 100 employees beginning July 1965; the threshold was lowered to 25 employees 3 years later. In September 1963, Executive Order 11246 prohibited employment discrimination by Federal contractors. The Equal Employment Opportunity Act of 1972 extended civil rights coverage to employers with 15 to 24 employees and expanded the enforcement power of the EEOC.

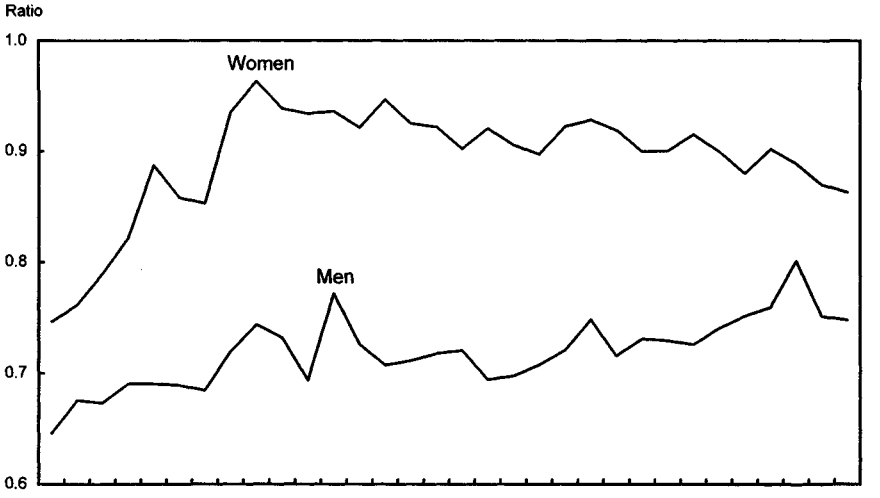
Measurement of the effects of civil rights legislation has been difficult, since the timing of the legislation coincided with many other significant changes in the U.S. labor market. Despite improvements in employment and wages for African Americans since the mid-1960s, it is sometimes difficult to identify a single cause for each change, or to measure the extent to which Federal policy (as opposed to other factors such as economic conditions or local sentiment) played a role. Nonetheless, researchers have documented a link between the enactment of Federal antidiscrimination policy and evidence of further opportunities for minorities and reduced discrimination.

An alternative argument is that these policies came about in part as a result of demand from employers. In a tight labor market, discrimination becomes costly, and it is possible that the passage of Title VII and subsequent legislation provided a justification for what would have occurred anyway. Nonetheless, it appears that government policy played a role and achieved its intended effect of opening opportunities and increasing the share of African American employment.

Some have argued that, rather than providing net economy-wide gains, Title VII and its amendments merely shifted African American employment from small to large employers. To isolate the true effect of the legislation, a recent study compared the growth in employment share across large firms with the growth across small firms newly bound by the 1972 expansion of the EEOC. The study found that there were gains in the employment share and pay of African Americans in the industries most affected by the 1972 legislation. The timing of these gains provides evidence that the Federal policy positively affected the labor market status of African Americans.

Chart 4-7 **Ratios of Median Annual Earnings of African American Workers to Earnings of White Workers**

African American men and women have seen earnings gains relative to whites of the same sex since the mid-1960s, but for women the gap has widened since 1974.



Note: Data are for full-time, full-year workers, aged 14 and over through 1979 and aged 15 and over thereafter.
Source: Department of Commerce (Bureau of the Census).

long-term decline in the labor force participation of men, particularly older men, and the long-term increase in female labor force participation are also evident in the populations of disabled men and women, respectively. Overall, however, persons with disabilities have lower rates of labor force activity (whether working, looking for work, or laid off). They are limited in their choice of occupation, and they are less likely to work in higher paying occupations than persons without disabilities. These limitations are particularly evident for those with severe disabilities. In 1994, for example, only 29.5 percent of adults aged 20-64 who had severe disabilities participated in the labor market. In contrast, 84.5 percent of adults in that age group without disabilities and 81.6 percent of those with moderate disabilities participated in the labor force. Despite some evidence of an upward trend in the labor market activity of those with severe disabilities, there is ample room for improvement.

The increasing importance, documented above, of education and of certain skills in the labor market will undoubtedly play an important role in future labor market outcomes for the disabled. The rate of labor force activity of severely disabled workers with a college degree (52.4 percent) was more than 1.5 times that of comparable workers with only 12 years of education (31.2 percent). It was about three times that of workers with less than 12 years of education (17.3 percent). Evidence also suggests that having computer skills improves the labor market outcomes of workers with

severe disabilities. For example, a recent study examined the earnings and work behavior of a group of workers who had experienced a spinal cord injury. Although their injuries led to a large decrease in employment, hours worked, and weekly earnings, if they had computer skills they returned more quickly to work and had relatively higher earnings once there. These results were still observed after controlling for educational attainment.

In recent years, government policies have begun to focus on helping disabled workers return to work. The 1990 Americans with Disabilities Act was designed to eliminate discrimination against the disabled, including in the workplace. In December 1999 the President signed the Ticket to Work and Work Incentives Improvement Act of 1999, to help eliminate the institutional barriers that limit employment opportunities for persons with disabilities. The act provides health insurance protections to the working disabled by giving States new options to allow workers with disabilities to buy into Medicaid. It extends Medicare coverage for an additional 4½ years for beneficiaries of disability insurance who return to work. It also creates a Medicaid buy-in demonstration program to help those who are disabled but still able to work. And it provides grants for States to develop infrastructure that will help people with disabilities return to work. The act also offers a "Ticket-to-Work" for disabled beneficiaries of Social Security disability insurance and Supplemental Security Income, giving them more choice in the selection of vocational rehabilitation and employment service providers.

Preparing the American Work Force for the 21st Century

The transformation of the economy from one based on agriculture and manufacturing into one based on services and high-technology skills has meant many changes for the American economy and people. It has, for example, led to the rise of new economic centers such as Silicon Valley and the decline of other areas that were once vibrant and had jobs in abundance. This Administration has led the battle to revitalize those areas of the country that have been left behind (Box 4-2). The changing economy has also meant a new set of challenges for the American worker. To compete successfully in the new economy, the American work force must continue to change. This section documents the role of education and training in providing the skills necessary for the labor market of today.

Box 4-2. Helping Areas Left Behind: Opening New Markets

The movement from agriculture to manufacturing that took place at the beginning of the 20th century implied a movement of jobs and people from rural to urban areas. Later, suburban employment grew as the rise in service occupations led to job creation outside the central cities. Accompanying this change has been a broader movement of manufacturing jobs out of the Northeast and the Midwest, the Nation's traditional manufacturing centers, to the South and the West. In all geographic regions, however, the largest share of employment growth between 1980 and 1990 took place in suburban counties. The movement of manufacturing and service jobs from central cities and rural areas has led to the further decay of many of these areas and to a spatial mismatch between the availability of jobs and workers to fill them.

To help revitalize areas that have been left behind because of sectoral shifts or urban flight, the Administration has implemented a number of important policies and proposed others. A prime example is the creation of empowerment zones and enterprise communities in struggling areas, as provided for in the Omnibus Budget Reconciliation Act of 1993. Businesses in these areas are eligible for tax incentives to facilitate employment, financing, and investment. In 1994 the first 9 empowerment zones were designated, along with 95 smaller enterprise communities. These programs have leveraged over $10 billion in additional public and private revitalization efforts, and a recent survey of businesses operating in the 31 empowerment zones created to date finds that these tax incentives have been an important factor in employment decisions. The fiscal 2001 budget proposes a series of extensions to this program, including a third round of 10 new empowerment zones. It will also extend existing wage credits for existing and new empowerment zones through 2009.

In addition, the Administration has proposed a new set of policies to spur investment in low-income areas. These include a tax credit to spur equity capital; creation of America's Private Investment Companies (APICs), patterned after overseas investment institutions to leverage investment in untapped domestic markets; and several programs designed to assist small businesses in low-income areas. The proposal would expand BusinessLINC, a public-private partnership that encourages large businesses to work with small business owners; microenterprise initiatives to provide funding for technical assistance to low-income microentrepreneurs; and the targeting of Small Business Investment Company resources to areas served by the New Markets initiative.

continued on next page...

Box 4-2.—*continued*

Other policy initiatives seek to overcome the spatial mismatch between workers and jobs. One of these is the "Moving to Opportunity" demonstration project, which helps families that leave high-poverty inner-city neighborhoods through counseling and rental assistance. Another is the "Bridges to Work" demonstration project, which provides placement, transportation, and support services to inner-city residents so that they can take advantage of suburban job opportunities.

Building Foundations: Educating America's Youth

The economic decision to improve one's skills—to invest in one's own human capital—is based on both the cost of that investment and the expected return. The cost includes such basic things as expenditure on tuition and books, but it also includes an opportunity cost: the earnings that the worker could have made had he or she chosen to stay in the labor market rather than go to school. And the return—or, to be precise, the *private* return—consists mainly of the higher wages available in the labor market to workers with more schooling or training. On average, having more years of formal schooling leads to better labor market outcomes for those schooled: higher wages, higher rates of employment, and lower rates of unemployment. Although it is difficult to put an exact dollar figure on this return, the evidence presented above indicates that it has increased substantially in recent decades. Further, and perhaps more important from a policy perspective, evidence suggests that society at large benefits from having a more educated population. The *social* return to education, for example, might include a more productive work force that can pay taxes, draws less on government-provided social programs, and participates more effectively in the democratic process.

Given the high rate of return to schooling, individuals and families have a tremendous private incentive to invest in education. People often make great financial and personal sacrifices so that they or their children can get more schooling, or schooling of higher quality. Despite the incentives, however, there are a number of reasons to expect that people might underinvest in education. Financial constraints present a problem for some. Because they cannot use their future human capital as collateral, would-be students may not be able to borrow enough to finance their education. They may also be underinformed, or misinformed, about the true opportunities available in the labor market. In particular, they may not know or realize what level of wages they could eventually earn if they make the human capital investment, or the length of time over which they will reap the returns. Perhaps most important for policy, when people make these personal decisions, they may not take into account the benefits of their further education to the rest of

society as well as to themselves. These explanations all point to a role for government to play in the provision of education and training.

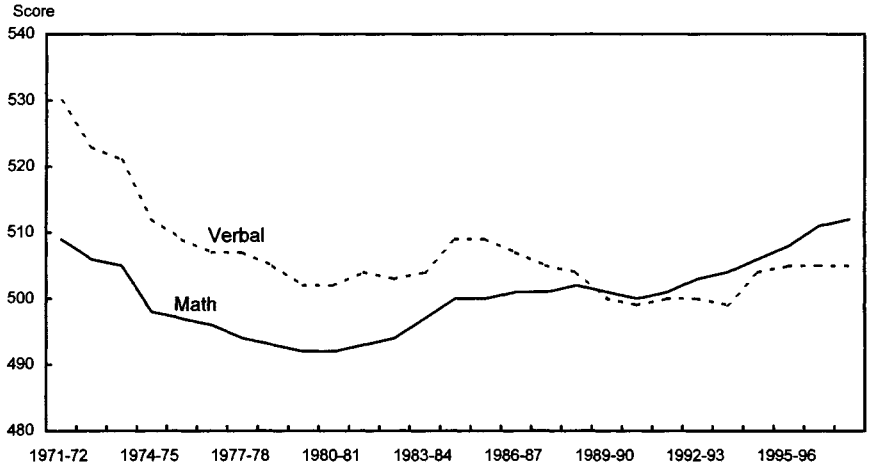
The challenge for government with respect to schools is to give students the skills they need to succeed in today's economy and tomorrow's and to participate more fully in American life in general. Fortunately, students themselves are recognizing the need for improved skills, and many are seeking greater challenge in their education. Students today are taking more courses in core academic subjects than did their counterparts in the early 1980s, and the courses they are taking are more challenging. For example, a higher percentage of high school graduates are completing algebra and higher-level mathematics courses, as well as courses in biology, chemistry, and physics, than in the 1980s. The proportion of students taking college advanced placement examinations has also increased dramatically, from 50 twelfth-graders out of every thousand in 1984 to 131 per thousand in 1997.

Although measuring educational progress is difficult, test scores may be indicative, and here the signs are mixed but generally positive in recent years. Since the early 1980s, scores on the National Assessment of Educational Progress (NAEP) show modest improvements in mathematics and science proficiency, but little change in reading and writing proficiency. Differences in NAEP scores by sex are now small, with females scoring higher in writing and reading achievement and males generally scoring higher in science and mathematics. Results for African Americans and Hispanics also show improvement since the mid-1970s. Indeed, the end of legal segregation, followed by efforts to equalize spending on public schools since 1970, has made a substantial difference in student achievement. On every major national test, including the NAEP, the gap between minority and white students' test scores narrowed substantially between 1970 and 1990.

Scores on the Scholastic Assessment Test (SAT, a test typically taken by college-bound high school juniors and seniors) have also shown improvement in recent years. Mathematics scores on the SAT were 16 points higher in 1995 than in 1980, although students scored higher on both parts of the test, mathematics and verbal, in the early 1970s (Chart 4-8; scores reflect the recentering that occurred in 1995). Between 1976 and 1995, the combined verbal and mathematics scores of African Americans climbed by over 50 points, while those of white students remained roughly stable. Observed gains in SAT scores are particularly impressive given that the proportion of high school graduates taking the test has increased by about a fourth since the early 1970s.

The gains that the U.S. education system has achieved in the past few decades deserve recognition, but they should be viewed in a broader context. Schools have been changing, but the economy has been changing more quickly. The result, as discussed above, is that a high school diploma alone is no longer a ticket to the middle class. Even at higher educational levels there may be a mismatch between the skills acquired in school and the skill

Chart 4-8 **Average Scores on the Scholastic Assessment Test (SAT)**
Mathematics test scores have improved since 1980, but verbal scores remain stagnant and below their 1970s values.



Note: Data for 1972 to 1986 were converted to the recentered scale by applying a formula applied to the original mean and standard deviation. For 1987 to 1995, individual student scores were converted to the recentered scale and recomputed. For 1996 and 1997, most students received scores on the recentered scale score. Any score on the original scale was converted to the recentered scale before recomputing the mean.
Source: College Entrance Examination Board, *National Report on College-Bound Seniors.*

requirements of jobs. To right this balance, the Administration has made improving education one of its highest priorities (Box 4-3).

Greater Access to Preschool Education: The Head Start Program

Research demonstrates that the early preschool years, when human ability and motivation are being shaped, are critical for skill formation. Developmental programs that intervene early in life have been shown to be more cost-effective than later attempts at remediation. One such program is Head Start, which since 1965 has provided comprehensive developmental services for America's low-income preschool children as well as social services for their families. These services focus on fostering intellectual, social, and emotional growth as well as providing a comprehensive health program. Since 1993, funding for Head Start has nearly doubled, to $5.3 billion in 2000. The additional funds have enabled Head Start to increase its enrollment from 714,000 to 877,000 children since 1993 and to enhance the quality of its services. The President's 2001 budget proposes a $1 billion increase in this program.

Although conclusive evidence is limited, two recent studies have shown the effectiveness of Head Start. A 1995 study used a nationally representative data set to compare children who had participated in the program with their siblings who had not. This methodology allowed the researchers to control for many confounding factors that they could not observe but that may be related to outcomes. The study found significant and persistent effects of Head Start in

Box 4-3. The Administration's Education Goals

In his 1998 State of the Union Address, the President stated that "[t]he Information Age is, first and foremost, an education age, in which education must start at birth and continue throughout a lifetime." To meet the challenges of the information-based, skills-intensive economy, the President has set ambitious goals for the Nation's education system:

- All students will read independently and well by the end of third grade.
- All students will master challenging mathematics, including the foundations of algebra and geometry, by the end of eighth grade.
- By 18 years of age, all students will be prepared for and able to afford college.
- All States and schools will have challenging and clear standards of achievement and accountability for all children, as well as effective strategies for reaching those standards.
- There will be a talented, dedicated, and well-prepared teacher in every classroom.
- Every classroom will be connected to the Internet, and all students will be technologically literate.
- Every school will be strong, safe, drug-free, and disciplined.

To achieve these goals, the President has proposed and implemented a broad agenda of education policies that extend from preschool to college.

increasing test scores and school attainment and in reducing grade repetition for whites. However, the large and significant gains in test scores for African Americans were found to be quickly lost after they left the program, perhaps because of lower quality in the schools that so many of them attend after leaving the program. Another study using the same methodology found large positive effects on test scores and schooling attainment for Hispanic children, although long-term follow-up was unavailable.

Improving Elementary and Secondary Education

It is important to ensure that all students have access to good-quality educational resources once they enter school. As was stated at the beginning of this chapter, students need society's help as they prepare themselves for a changing work force and the demands of a technology-driven labor market. The President has therefore laid out a three-part agenda to help State and local governments

build and maintain a world-class elementary and secondary school system. The first part of this agenda focuses on setting high standards. A national consensus has emerged on the key role of standards in school improvement: 48 States now test their students, and 36 publish annual report cards on individual schools. However, only 19 States currently use more extensive public rating systems to identify low-performing schools, and only 16 apply sanctions to failing schools.

A second and related way to encourage local cooperation in improving schools is to increase the accountability of those responsible for their outcomes. The Administration has proposed the Education Accountability Act, which requires States and school districts to comply with accountability measures in order to receive Federal funds. These accountability measures include identifying failing schools and making critical investments to turn them around; reconstituting or closing chronically underperforming schools; employing qualified teachers and assigning them to teach in their field of expertise; instituting disciplinary codes and issuing school report cards; and ending social promotion by making sure students get the help they need to succeed in school.

Finally, the President has emphasized the importance of investing in strategies aimed at raising student achievement. These include assuring students of access to the latest technology, reducing class sizes in the early grades, improving teacher quality, providing opportunities for extended learning in after-school and summer school programs, providing free and appropriate public education to students with disabilities, and offering options for public school choice. Each of these strategies is discussed below.

Improving Access to the Latest Technology. Computer and technology skills are increasingly important for students as they prepare for the future. Knowledge of these skills provides a gateway to higher wages and to the new jobs of the 21st century. Accordingly, in 1996 this Administration made it a priority to help all children gain access to the tools they need to prosper in a changing economy. The Technology Literacy Challenge had four basic goals: to equip all classrooms with modern computers, to connect all classrooms to the Internet, to promote the development of quality educational software, and to prepare teachers to use technology effectively. It is important to find creative ways to use technology in the classroom, because evidence suggests that it can be a useful tool. For example, a recent study showed that eighth graders who use computers to learn higher order thinking skills, or who had teachers trained in the use of technology, raised their achievement in mathematics by more than one-third of a grade level.

The Technology Literacy Challenge program addresses the goal of *equipping classrooms with computers* through the Technology Literacy Challenge Fund. Resources available through this fund can be used to help States and local school districts increase the number of modern, multimedia computers in the classroom. The fund's 2000 budget was $425 million. In the 1998-99 academic year

there were 9.8 students for every multimedia computer in use. This represented an improvement from 21.2 students per computer only 2 years before. The Administration has also supported the Computers for Learning program, an interagency effort to refurbish surplus computers from Federal Government operations and distribute them to schools. Thousands of computers from this program are currently in use in schools across the country.

One of the most important programs designed to help in *linking schools to the Internet* has been the E-rate program created under the Telecommunications Act of 1996. Through this program, approximately $3.6 billion has been made available since 1998 in the form of discounts to over 50,000 schools and libraries so that they can afford telecommunications equipment, Internet access, and internal connections to the classroom. The level of the discount for which a school is eligible is determined by the proportion of children eligible to participate in the Federal school lunch program. In this way the E-rate targets those schools and libraries that serve the most disadvantaged students. In fact, 70 percent of funding in the program's second year went to schools in the lowest income areas.

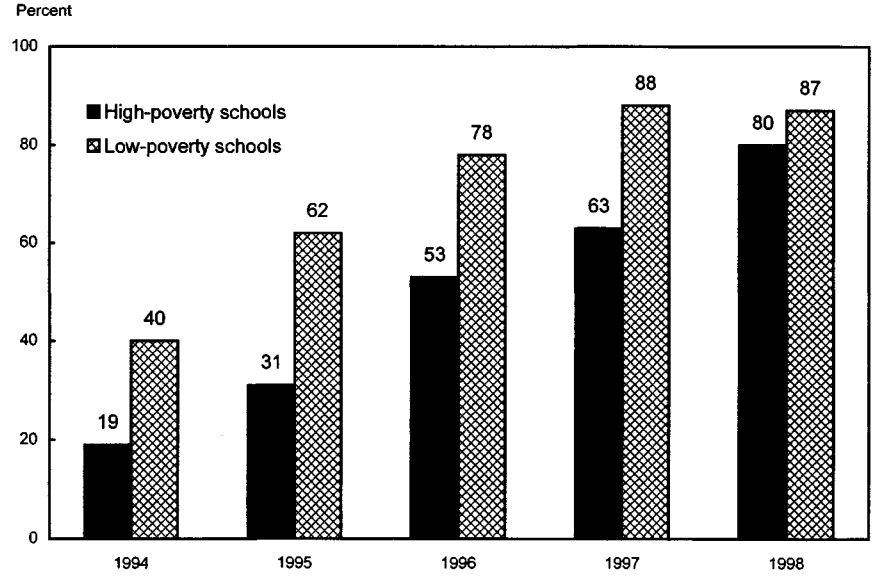
Progress so far has been dramatic. In 1994, according to the Department of Education, only 3 percent of classrooms had Internet connections; by 1998 that figure had risen to 51 percent. Already the E-rate alone has helped connect more than 1 million classrooms.

There is still a long way to go, however, before all children have easy access to the new medium. A "digital divide" remains for poor and minority children who lack the same access to this technology in their homes that other children enjoy. In fact, households with incomes over $75,000 are more than five times as likely to have a computer at home and more than seven times as likely to have home Internet access as those with incomes under $10,000. But with recent advances through the E-rate, the gap between rich and poor within schools has narrowed tremendously (Chart 4-9).

An essential complement to computer hardware and Internet access is *developing user-friendly educational software with engaging content.* The Department of Education's Technology Innovation Challenge Grants support partnerships among educators, the private sector, and nonprofit organizations to develop compelling applications of educational technology. For example, teachers in San Diego are working with university researchers and other partners to develop a curriculum of studies with an ocean exploration theme, designed to improve performance in mathematics and science.

Finally, making effective use of this new hardware and software requires *training teachers to use the new technology.* The Congress has approved a $75 million initiative proposed by the President to help train new teachers in the use of the new high-tech tools in their classrooms. This program will help ensure that all new teachers entering the work force can integrate technology effectively into their curriculum and teaching styles.

Chart 4-9 **Shares of Public Schools with Internet Access by Poverty Status**
The digital divide between low-poverty and high-poverty schools has all but disappeared.



Source: Department of Education (National Center for Education Statistics).

Class Size Reduction. Average class size in the United States declined from 29 in 1961 to 24 in 1991. Despite this improvement, however, many parents and educators believe class sizes are still too large. There is also substantial variation in class size, with many students still being taught in classes with more than 30 students. Smaller classes allow teachers to interact more with each student and to tailor instruction to that student's needs, and they allow students to participate more in class discussions. These benefits can boost students' academic performance. In Tennessee's Project STAR, for example, a group of students from kindergarten through third grade were randomly assigned to either regular-sized classes (22 to 25 students) or smaller classes (13 to 17 students). Over 11,000 students in 79 schools eventually participated in the program. Results show that students in smaller classes learned more in the first year of the program than did students in larger classes, and that these gains were maintained as these children continued in smaller classes in subsequent years. Some researchers have argued that children get a one-time gain from a reduction in class size, and that this gain is maintained in later years whether or not they remain in smaller classes.

In his 1999 State of the Union Address, the President proposed the first-ever nationwide effort to reduce class size in the early grades. The Congress passed the proposed legislation in 1999. School districts around the Nation received a total of $1.3 billion to enable them to recruit, hire, and train new, qualified teachers for the 2000-2001 school year. This was the first installment of a 7-year initiative to help schools hire 100,000 new teachers and reduce class size in the

early grades to a nationwide average of 18. All 50 States have received funds through the program. A recent report by the Department of Education on the program's first year estimated that 1.7 million children are benefiting from the program; that 29,000 teachers have been hired; that, in schools receiving the bulk of the funding, class sizes for grades one through three were reduced by an average of five students; and that the program's flexibility has allowed it to complement State and local efforts.

Improving Teacher Quality. Research has shown that teachers do make a difference to student achievement, although the exact characteristics that make some teachers more effective than others remain elusive. In fiscal 2000, $98 million was appropriated for Teacher Quality Enhancement Grants, which help link teacher preparation institutions and high-need school districts, to strengthen teacher education and to provide incentives to prospective teachers to teach in high-need schools. As part of the Hispanic Education Action Plan, in the fiscal 2001 budget the Administration has requested $100 million for Bilingual Education Professional Development. This would be an increase of $28.5 million over the fiscal 2000 level. The funding will provide more than 2,000 additional instructors in bilingual education and English as a second language with the high-quality pre-service and in-service training they need to teach students with limited proficiency in English.

Opportunities for Extended Learning in After-School Care and Summer School. The summer months can be an important time for learning outside of the classroom. Recent evidence has shown, however, that the test scores of poorer children are more likely to fall over the summer than those of children from wealthier families. This research suggests the importance of providing disadvantaged children with increased opportunities to learn. The President has called for a large investment in after-school and summer school programs to give children the extra help they need to meet high educational standards. The fiscal 2000 budget more than doubled Federal investment in these programs (21st Century Community Learning Centers), to $453 million, to provide educational support to 675,000 students. The President has proposed doubling funding again for fiscal 2001, to $1.0 billion.

Providing Public Education to All Students with Disabilities. The Individuals with Disabilities Act, first enacted in 1975, has helped change the lives of millions of people with disabilities. Before its enactment, approximately 1 million children with disabilities were shut out of schools, and hundreds of thousands more were denied appropriate services. In 1986, 26 percent of children with disabilities were educated in regular classrooms. By 1996 that proportion had risen to 45 percent. Today, people with disabilities are graduating from high school and going to college in unprecedented numbers.

During this Administration, the Federal investment in educating young people with disabilities has more than doubled, from nearly $3.0 billion in fiscal 1993 to about $6.0 billion in fiscal 2000, and the fiscal 2001 budget would increase this spending by $333 million. More important, however, is the Administration's strong commitment to improving the educational outcomes of disabled children. The 1997 amendments to the Individuals with Disabilities Act made it clear that the education of children with disabilities must be based on the same challenging standards applied to nondisabled students, with appropriate modifications and supports for their disabilities.

Options for Public School Choice. Charter schools provide parents with greater choice within the public school system. They also allow educators an opportunity to create innovative learning environments while remaining accountable for student achievement. The number of public charter schools nationwide has risen from 2 in 1993 to nearly 1,700 in 1999. Through the President's leadership, startup funding of $145 million for as many as 2,000 charter schools in 2000 has been provided.

Greater Access to Postsecondary Education

As discussed earlier in this chapter, the difference in average wages between those Americans with postsecondary education and those without it is considerable. One way to help people improve their economic status is to provide greater access to postsecondary education and more opportunities for people to enhance their skills throughout their working lives. The Administration is committed to making postsecondary education both attainable and affordable for all Americans, from recent high school graduates to adult learners and displaced workers. To help ensure access to 4-year and community colleges (Box 4-4), the President has proposed and supported programs that prepare students for postsecondary education and help make college affordable.

Preparing Students for College. Too many children, especially from low-income families, are reaching college age without the skills and knowledge they need to go on to college. Recent research has shown that students form their educational expectations early, and courses taken early in junior high or high school are closely related to postsecondary enrollment. This indicates that the end of high school may be too late to inform students of the importance of a college education. Rather, information on the importance of college admission requirements as well as on financial aid is critical for students early in their educational careers. GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs) helps low-income students prepare for education beyond high school by providing tutoring, counseling, mentoring, information on financial aid, and other assistance these students need to become ready for college. The President is requesting $325 million for GEAR UP in fiscal 2001, an increase from $200 million in fiscal 2000, to finance needed services to over 1.4 million students in high-poverty schools.

Box 4-4. The Role of Community Colleges

Community colleges more than doubled in number and quadrupled their enrollments during the 1960s. In 1995, 5.5 million students were enrolled in these 2-year colleges, accounting for 38 percent of enrollments in all postsecondary institutions. Because community colleges typically charge lower fees than 4-year institutions and operate under open admissions policies, they have helped provide greater access to education for people at all income levels. They have lowered the costs of attendance in other ways as well, by offering evening and weekend classes where workers can enhance their skills while holding a job.

Community colleges were originally designed as a stepping stone for students who would later transfer to 4-year colleges to complete their bachelor's degrees. Today, however, community colleges provide a wide range of offerings, including vocational training and continuing adult education. The dramatic increase in community college enrollment was primarily the result of growth in part-time students; today roughly 65 percent of community college students attend part-time.

Almost 36 percent of community college students are 30 years old or older, compared with only 22 percent of students at public 4-year colleges. These schools have become an important source of the lifelong learning that today's dynamic economy demands. Recent evidence suggests that community colleges have increased the overall educational attainment of the American work force, and that one of their major roles has become that of providing access to higher education for those not traditionally served by the 4-year college system. Other evidence suggests that these schools also effectively address the skills mismatch described earlier. For example, a recent study noted that high-technology manufacturers were less likely to report difficulty in finding skilled labor in communities that had a community college than in those that did not.

TRIO programs are another important resource to help disadvantaged students prepare for and succeed in college. These are educational outreach programs designed to motivate and support students from low-income families. There are currently 2,400 TRIO programs serving 700,000 students. The fiscal 2000 budget is $645 million. Evaluation results from one type of TRIO program, Upward Bound, found that students in the program were four times more likely to earn a college degree than students from similar backgrounds who were not in TRIO.

Helping Finance Postsecondary Education. Enacted in 1997, the HOPE Scholarship program and the Lifetime Learning tax credit represent the largest Federal investment in higher education since the G.I. Bill over 50

years ago. In 2000, 13.1 million students—5.9 million receiving HOPE Scholarships and 7.2 million claiming the Lifetime Learning credit—are eligible to benefit. The budget for HOPE Scholarships in fiscal 2000 was approximately $5 billion. Each HOPE Scholarship provides a tax credit of up to $1,500 for each of the first 2 years of college for students enrolled on at least a half-time basis. This credit is phased out for joint tax filers with incomes between $80,000 and $100,000, and for single filers making between $40,000 and $50,000. By reducing the financial barriers to continued education, the President hopes to make the first 2 years of college as universal as high school.

In addition, the 2000 Federal budget provides $7.6 billion for Pell grants, a program that provides direct financial assistance to help financially needy students pay for their postsecondary education. The maximum award was increased 43 percent between 1993 and 2000, from $2,300 to $3,300.

To further these goals, the President's 2001 budget proposes a $30 billion investment in the form of a college opportunity tax cut. This initiative would offer a 28 percent tax credit for higher education expenses and would set higher income thresholds than do existing education tax credits. Unlike with the HOPE Scholarship, there would be no limit on the number of years in which a student could claim the credit. When fully phased in, the credit would cover $10,000 in expenses.

The Lifetime Learning tax credit targets adults who want to go back to school, change careers, or take courses to upgrade their skills, as well as college juniors and seniors and graduate and professional degree students. The 20 percent credit applies to the first $5,000 of a family's qualified education expenses through 2002 and to the first $10,000 thereafter, and it phases out at the same income levels as the HOPE Scholarship. The fiscal 2000 budget for this credit was $2.4 billion.

Student loans have opened the doors to college for millions of Americans. In 1993 the President established the direct student loan program to reduce costs and increase efficiency in the Federal Government's student loan programs and to offer expanded benefits to borrowers. The program offered students the option of income-contingent repayment: installments were based in part on the borrower's income after completing studies. In the Higher Education Amendments of 1998, the Administration proposed and obtained significantly lower interest rates for borrowers on student loans, easing the burden of repayment for new borrowers and for borrowers who consolidate their loans.

The Continuing Challenge: Reeducating and Retraining

Progress in strengthening formal education is a key ingredient in preparing young people for the labor market, but training after formal education is also essential, both for those just entering the market and for those well into their careers. To take advantage of the opportunities offered by an increasingly global, competitive, and information-driven economy, workers today may require ongoing, lifelong learning.

The Provision of Training

In large measure, it is the responsibility of individuals and firms, not of government, to develop the methods and practices most appropriate for promoting lifelong learning and training. As with education, both individuals and firms have strong incentives to invest in training: both stand to reap high returns from their investments. But as with education, government policies may have an important role to play in facilitating such investments.

Employers have a clear interest in providing their employees with the specialized training they need to perform those tasks that they can perform for that employer and nowhere else. Companies should therefore be willing to provide training in these firm-specific skills. In contrast, many other valuable skills are occupation- rather than firm-specific, and still others, such as many mathematical and literacy skills, are quite general in their application. The data on training described below suggest that firms do provide substantial training in general skills, but it is difficult to disentangle the cost of employer investments in training from that of employee investments in training, even when the employer sponsors the training.

Firms provide general training for several reasons. They may simply be unable to find employees with the necessary occupational skills, or employees may need some general training before they can benefit from training in more firm-specific skills. When firms provide general training in their own facilities but do not pay employees their full wages while in training, it is largely the employees, not the firms, who are then doing the investing—they are paying an opportunity cost. In practice, both individuals and firms are likely to share in these investments, but employers will be reluctant to invest heavily in general skills when workers have high turnover rates, since the firm does not reap the returns on the investment. Despite the evidence that firms do provide general training, there is reason to believe they might underinvest in such training.

As in the case of education, there are reasons to believe that individuals might underinvest in their own general training. If they are not sure that the skills they will acquire will result in higher wage offers, they will hesitate to bear the costs. They may also underinvest because their incomes are too low to carry them

through a period of unpaid training. In times of rapid technological progress, workers may be unaware of the value of new training or consider it too risky: the same rapid change that makes the skill valuable today may make it obsolete tomorrow. Finally, again as with investments in formal schooling, individual workers may fail to invest in training because they do not take account of the full social benefits of training in their decisionmaking.

All these underinvestment scenarios provide reasons for government policies to encourage general training. One way in which government attempts to encourage investment in training is by allowing employers to deduct from taxable income the tuition payments for schooling they provide for their employees. Other policies are discussed below. First, however, it is worthwhile to review the evidence on the value of firm-based training.

Firm-Based Training

Privately provided training by firms themselves is the primary mechanism by which workers receive training in the United States, and there is evidence that this firm-based training is growing. Although this source of training is difficult to measure, a number of surveys have been conducted and agree on several conclusions. First, training is very widespread: in 1994, 81 percent of all establishments offered some type of formal training, and 57 percent said that they had increased the amount offered since 1991 (only 2 percent reported providing less training). Second, firms with more than 1,000 employees are more likely to invest in training than small firms; virtually all large firms report that they offer formal training. This may be because smaller firms have trouble financing certain fixed costs associated with training, or because it is more difficult to measure the informal training that takes place in smaller firms. Third, there is considerable variation across industries, with a higher incidence of training provision in nonmanufacturing than in manufacturing firms. Fourth, establishments with more highly educated workers (which also tend to be larger establishments) are more likely to provide training. Finally, training is more likely when the firm is already making other investments, such as investments in capital, or in new organizational practices, such as self-managed teams or other "high-performance" work practices.

These data suggest that firm-based training becomes more prevalent as firms experience rapid technological progress, but much training is specific to the employer and is not of a general nature. For example, training in basic literacy and numeracy, in computer skills, or in teamwork is less common than training in safety procedures or in new, firm-specific production methods. Only 27 percent of all establishments provide training in basic educational skills for their workers, whereas 53 percent invest in computer-related skills and 82 percent invest in safety training. Although more workers receive training from their employers than from government-sponsored programs,

the level of employer-provided training may still, for the reasons discussed above, fall short of what is socially optimal. This is particularly true for lower income groups or those in industries experiencing increases in imports or other conditions associated with worker dislocation.

These incentives to underinvest in employer-provided general training may be particularly strong in the United States, where labor turnover is high and there is no national, standardized credentialing system for this type of training. U.S. companies invest roughly $60 billion a year on education, training, and upgrading skills, but this is modest relative to the challenge posed to the Nation by rapidly changing workplace demands.

Government Training Programs

Government training programs are aimed primarily at workers who have lost their jobs and are having difficulty finding new ones, or at those who are unemployed and disadvantaged and may lack the skills or experience to enter the labor market without further preparation. Some employment and training programs are designed specifically to help welfare recipients go to work. Typically, training programs include some form of remedial or vocational education, subsidized employment to provide job experience, or guidance in how to find a job.

Modern U.S. training programs trace their history back to the mid-1960s. The 1964 Economic Opportunity Act created the Job Corps, which still operates today, currently providing training for disadvantaged youth at over 100 urban and rural residential centers throughout the United States. Since its inception, the Job Corps has served more than 1.7 million young people. The Manpower Development and Training Act (MDTA) was enacted in 1962 to retrain technologically dislocated workers, but the Economic Opportunity Act of 1964 shifted its emphasis toward disadvantaged workers. In 1973 MDTA was replaced by the Comprehensive Employment and Training Act (CETA). This program, which gave State and local governments the authority to operate training programs with Federal grants, also had a public service job creation component, which grew quite large in the late 1970s. In an effort to shift more responsibility to the private sector, the Job Training Partnership Act (JTPA) replaced CETA in 1982. JTPA eliminated the public service employment component of training and further decentralized its administrative structure by giving primary responsibility for the program to State and local governments and the business community. The program currently serves over a million economically disadvantaged persons annually and was until recently the principal training program for the disadvantaged. JTPA is in the process of being replaced by the Workplace Investment Act, discussed below.

The first major mandatory training program for welfare recipients was the Work Incentive (WIN) Program of 1967. This program generally provided recipients of Aid to Families with Dependent Children (AFDC) with job search assistance. In 1988 WIN was replaced by the Job Opportunities and Basic Skills Training (JOBS) program. Created by the Family Support Act of 1988, this was a comprehensive welfare-to-work program that gave AFDC recipients the opportunity to take part in job training, work, and education-related activities that would lead toward economic self-sufficiency. The comprehensive welfare reform legislation passed in 1996 replaced JOBS (as well as the AFDC) with the Temporary Assistance for Needy Families (TANF) block grant. TANF gives States the flexibility to design their own welfare programs, provided they require recipients to participate in work or work-related activities in exchange for time-limited assistance. Within certain limitations, States may provide both pre- and postemployment services, including training to help welfare recipients find and keep a job.

Government appropriation specifically on training and employment services in fiscal 2000 amounted to approximately $5.5 billion a year, a level that implies that government-funded training opportunities for U.S. workers are limited relative to those available to workers in other countries. Comparative research done in 1994-95 found that the United States spent only 0.2 percent of its GDP on publicly funded employment and training programs, much less than many other industrial countries, including the United Kingdom (which spends 0.5 percent of GDP) and Sweden (3.0 percent).

Are government employment and training programs effective in improving labor market prospects for the disadvantaged? A review of the evidence provides grounds for cautious optimism. One general conclusion, however, is that these programs appear to have been more successful for disadvantaged adults—women in particular—than for disadvantaged youth.

Disadvantaged youth are perhaps the most difficult population to help, and success has been limited except in a few highly intensive or particularly well run programs. One program that has shown noteworthy success is the Center for Employment Training (CET) in San Jose, the only one of the 13 Jobstart demonstration programs found to be effective in increasing youth earnings. An evaluation of this program showed a 40 percent ($3,000) increase in participants' earnings. The Job Corps has also been shown to produce significant gains in earnings (about 15 percent per year) and to reduce the number of serious crimes that participants commit. Both of these programs are considerably more intensive than most other efforts: enrollees either reside at the program's facilities (in the case of the Job Corps) or spend many hours per month undergoing training (in the case of the CET). Finally, a number of programs have been specifically targeted at young single parents on welfare. Some of these programs have produced small short-run gains in employment and educational

attainment among teenage parents. However, it has proved difficult to sustain these gains once the program has been terminated.

The evidence is much more consistent that job training programs increase the earnings of disadvantaged adults, and particularly those of economically disadvantaged women. The JTPA Title II program, which offers short-term training and job search assistance to disadvantaged adults, appears to have increased the earnings of women in the program by 15 percent, and of men by 10 percent. More intensive programs that offer subsidized employment and supportive services to long-term welfare participants have yielded larger earnings gains. Mandatory welfare-to-work programs, which tend to offer job search assistance rather than training, have shown modest but positive effects on earnings and employment and small negative effects on welfare receipt. Given the very low initial earnings of most disadvantaged adults served by training programs, the gains made by most programs have not been enough to pull many of those served out of poverty. However, most studies documenting this finding were completed before the recent expansion of the Earned Income Tax Credit (EITC). It may be that the EITC boosts starting incomes enough so that the additional earnings generated by job search and training programs can then move noticeable numbers of participants out of poverty.

Research on the effects of employment and training programs for dislocated workers, although much more limited, suggests that some of these programs can be effective. Carefully targeted job search assistance programs can decrease the duration of unemployment and the receipt of unemployment insurance among displaced workers. These programs are generally cost-effective for the government. One study has suggested that for every dollar the government spent on targeted job search programs, the government saved about $2 in the form of reduced unemployment insurance payments and increased tax receipts due to faster reemployment.

Taken together, these results suggest that employment and training programs can achieve modest employment and earnings gains for disadvantaged women. These programs are also often cost-effective. Results for other groups are less clear. Moreover, the earnings gains generated by successful programs have usually not been enough to lift participants out of poverty. To some extent this is not surprising given the relatively modest and short-term nature of the investments these programs make. It is possible that more intensive interventions, focused on local skill demands and tailored to individual needs, would produce greater gains.

Training for the 21st Century

As Chapter 2 has documented, the macroeconomic environment for American workers improved markedly during the 1990s. The Nation's labor market is performing at extraordinary levels, with the unemployment rate at

a 30-year low, labor force participation at an all-time high, and real compensation measures recording strong gains. But even in today's economy, the rapid pace of change and the premium put on technology and skills may cause some workers to lose their jobs and have trouble finding new jobs given the skills they have. And those workers who have failed to acquire the necessary skills may have trouble securing employment that provides the middle-class standard of living they are striving for. This Administration has made it a priority to pursue training policies that will help ensure, for all those willing to work hard, an opportunity to prosper.

A key component of the Administration's efforts to strengthen work force development and promote lifelong learning is the Workforce Investment Act (WIA). Signed into law in August 1998, WIA represents the first major reform of the Nation's job training system in over 15 years. The act, which is now being implemented, will streamline and revitalize the system that provides workers with the information, advice, job search assistance, and training to find and retain good jobs, and provides employers with a pool of skilled workers. The act aims to enable any adult interested in advancing his or her career to continue learning, regardless of income; it also aims to provide high-quality information and services to all job seekers. Seven key principles are embodied in the law:

- *Streamlining services:* A variety of programs are being integrated at the street level to make the delivery system more accessible to both individuals and businesses. The Department of Labor has provided implementation funds to each State. Over 1,000 one-stop centers have already been opened. A group of Internet tools has also been created to provide timely and comprehensive labor market information (Box 4-5).
- *Empowering individuals:* Individual Training Accounts, along with consumer reports providing key information on the performance of training providers, and job counseling at one-stop centers will enable individuals to make informed training choices.
- *Making services universally accessible:* WIA aims to provide ready access to core employment-related services to all in need of those services.
- *Increased accountability:* States and local communities will be held accountable for meeting performance measures, will suffer sanctions if they fall short, and will receive incentive funds for strong results.
- *Strong role for local boards and business:* State and local Workforce Investment Boards will be chaired by a member of the business community and have a majority of members from business.
- *Provide local flexibility:* Local authorities will have flexibility to tailor delivery systems to meet the needs of their community.

Box 4-5. Using Technology to Help Workers: America's Career Kit

America's Career Kit uses the Internet to offer innovative ways to help workers find jobs, help employers find workers, and provide timely and valuable information about the labor market to all stakeholders. The initiative is designed to help reduce the mismatch between worker skills and shifting employer requirements. America's Career Kit consists of the following four websites:

- America's Job Bank is an Internet site that lists both job openings and resumes. With 6 million users each month, it is the Nation's largest online labor exchange.
- America's Talent Bank allows job seekers to post their resumes online, where potential employers can view them. A growing numbers of workers with information technology skills are using this resource.
- America's Career InfoNet provides information for both prospective employees and employers on employment trends, prevailing wages, and job training requirements. Data are also available on States and localities.
- America's Learning Exchange is an electronic marketplace for training and education resources. As of January 2000, the exchange counted 4,540 providers, 162,053 courses, and 42,968 programs.

- *Improved youth programs:* The act will foster connections between academic and occupational learning and provide activities geared toward youth development. A youth council will be established under each local Workforce Investment Board to improve coordination among organizations that serve young people. Given the mixed results of previous short-term training programs, WIA will require 12-month follow-up services in its programs.

The 2000 budget included $2.4 billion for the Universal Reemployment initiative. In a period of rapidly changing job demands, this program aims to provide training and reemployment services to all dislocated workers who want and need them. To this end, reemployment services will be targeted to unemployment insurance claimants in danger of exhausting their benefits, and funding for one-stop career centers will be increased. A new initiative will fund grants to identify skill shortages and target resources to industries struggling to fill jobs.

Finally, a new effort to encourage lifelong learning is taking shape through the Learning Anytime Anywhere Partnership program. This program supports partnerships among universities and colleges, businesses, community organizations, and other entities to use technology to address challenges in lifelong learning and postsecondary education.

Conclusion

Two key developments—the growing importance of education and the expansion of opportunity—transformed the American labor market in the 20th century. Tomorrow's workers will need skills and flexibility to respond to the opportunities and challenges that technology is making available. As long as skills command a premium in the labor market, both workers and firms will have an incentive to invest in education and training. But for any of a number of reasons, workers and firms might nevertheless underinvest in their human capital. Therefore government policy has continued—and will continue—to play a role in the acquisition of skills by the American work force. It is important, however, not to downplay the roles of other, noninstitutional factors, the most important of which is the family. As the chapter has noted, much of a person's skill formation occurs before he or she enters school. This implies that the environment in which a child is raised is very important for that child's later learning. Chapter 5 discusses the American family and the challenges it faces.